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C522 C602

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(58) Field of search

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(54) Turbocharging assembly with controllable air-charge compressors for an internal-combustion engine

(57) Air-charge compressors (16, 17) are in permanent driving connection with an exhaust-driven turbine (15) which cannot be cut out during operating periods of the internal-combustion engine. The control of the operating condition (no-load delivery or delivery operation) of each air-charge compressor (16, 17) is effected by a change-over device (20) controlling the pressure connection. To improve the efficiency of the turbocharging assembly (12) the power absorption of whichever air-charge compressor (16, 17) has just been adjusted to no-load delivery is minimised by controlling the fluid mass throughput of (for example) "recirculated" air or turbine exhaust gas (eg. Figs. 3, 4) through that compressor. Devices (29, 30) of the compressors (16, 17) enable the direction of air flow to the rotors to be controlled to impart one of counter-swirl, no-swirl or co-swirl to the air entering the rotor.

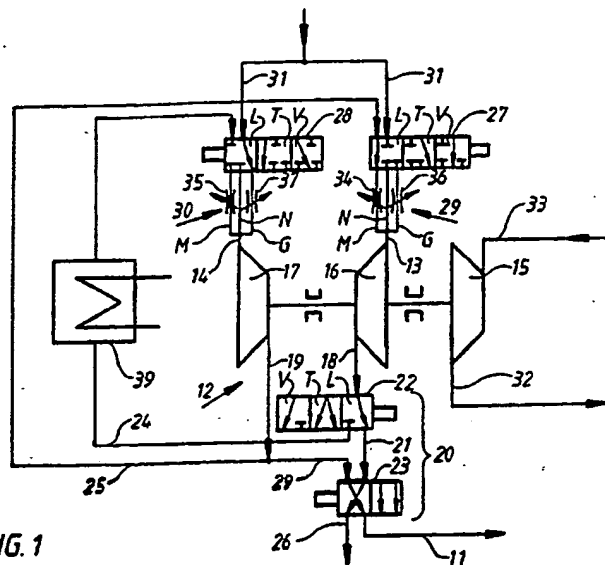


FIG. 1

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

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TURBOCHARGING ASSEMBLY WITH CONTROLLABLE AIR-CHARGER
COMPRESSORS FOR AN INTERNAL-COMBUSTION ENGINE

5 The invention relates to a turbocharging
assembly with controllable air-charge compressors for
an internal-combustion engine, the air-charge
compressors being in driving connection with an
10 exhaust-driven turbine which cannot be cut out during
operating periods of the internal-combustion engine,
the operating condition (no-load delivery or delivery
operation) of each air-charge compressor being
determined by a change-over device controlling the
pressure connection.

15 When a forced-induction internal-combustion
engine is operating under partial-load and at lower
than optimum speed of rotation it is advantageous to
adjust the turbocharging assembly to the reduced
20 output of exhaust-gas energy and to optimise the
air-charge supply.

 DE-C-3 932 721 discloses a turbocharging
assembly of the type in question, in which the
25 adjustment of the air-charge supply to the operating
condition of the internal-combustion engine is
effected by cutting in and out one of the two
air-charge compressors operating in parallel.

30 Although the air-charge compressor to be cut
out but entrained is connected to the common
air-intake duct it is, however, adjusted to so-called
no-load delivery by opening a venting outlet at its
pressure connection. At the speed of rotation of the
35 rotor of the turbocharging assembly predetermined by
the exhaust-driven turbine and the other air-charge

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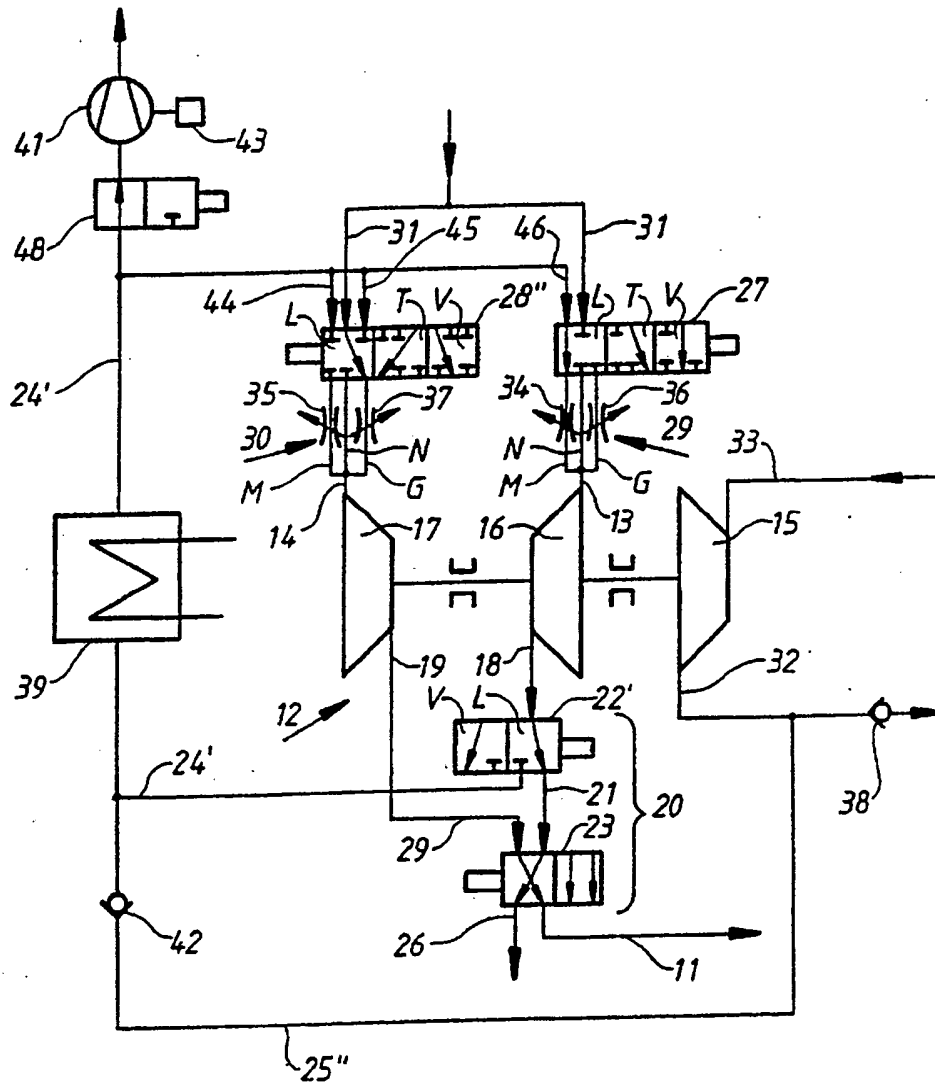


FIG. 4

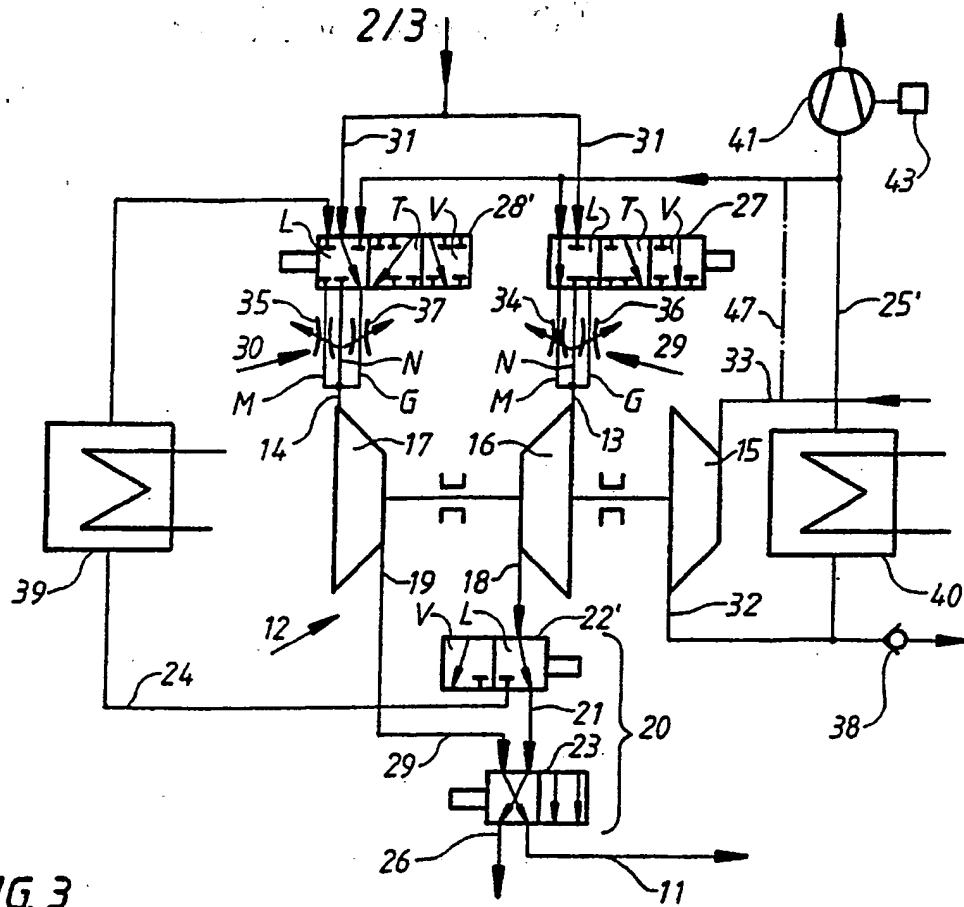


FIG. 3

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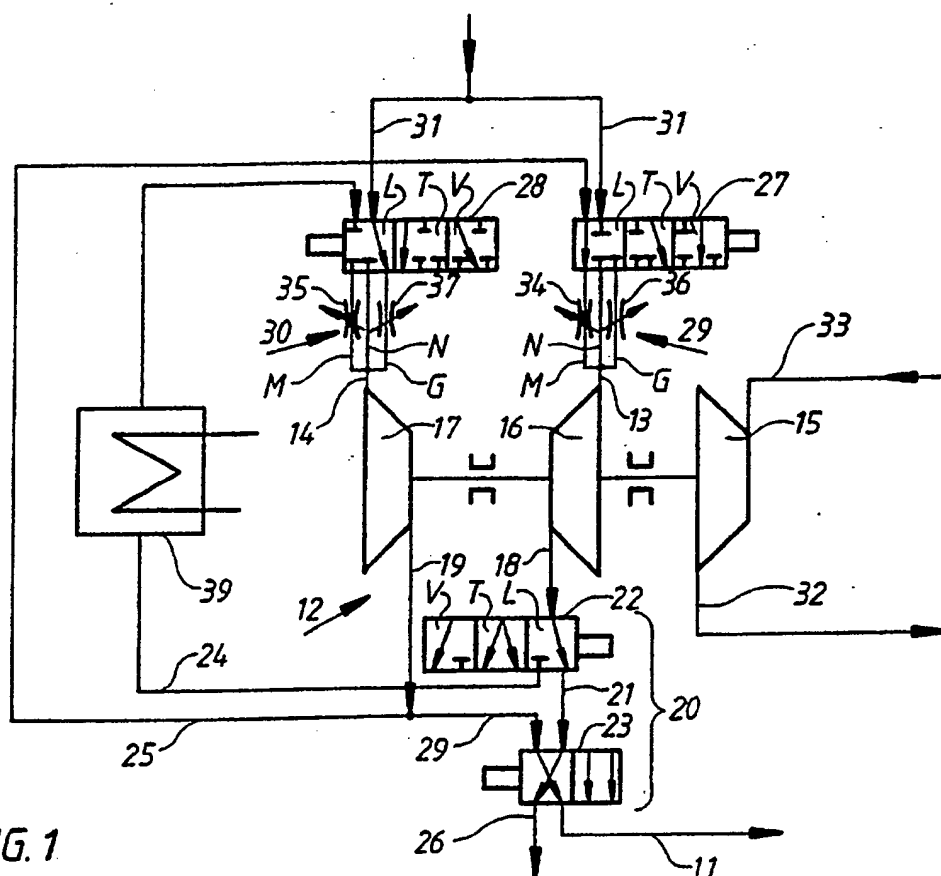


FIG. 1

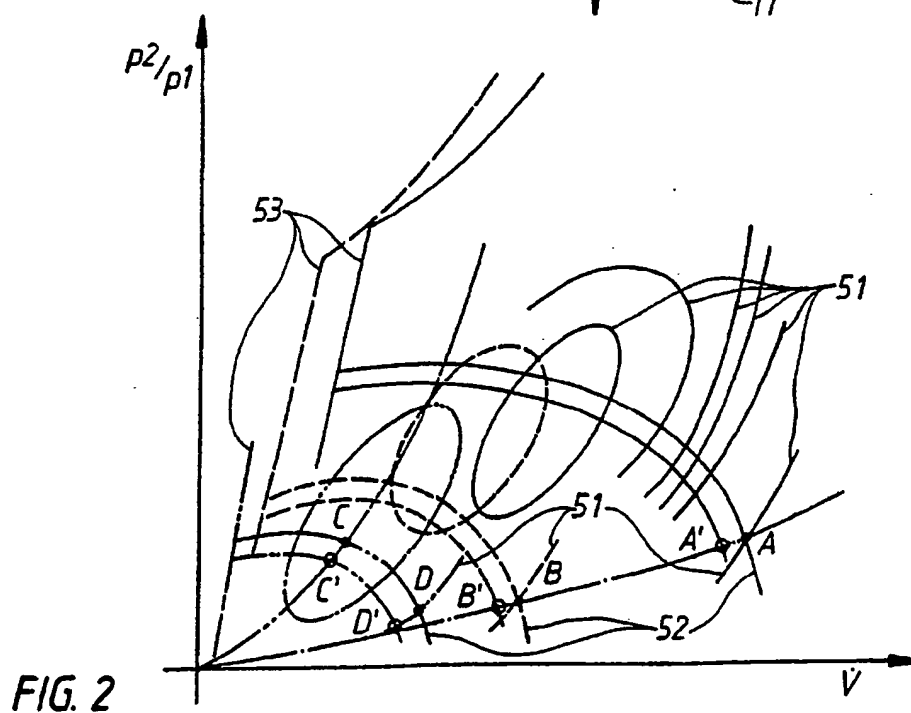


FIG. 2